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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,870	12/02/2003	Masashi Goto	2204-11-3	5414

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EXAMINER	
NGUYEN, DAO H	

ART UNIT	PAPER NUMBER
2818	

DATE MAILED: 10/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/726,870	GOTO ET AL.	
	Examiner	Art Unit	
	Dao H. Nguyen	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,13-17 and 26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,13-17 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. In response to the communications dated 08/14/2006, claims 1-5 13-17, and 26 are active in this application.

Claims 6-12 and 18-25 have been cancelled.

Remarks

2. Applicant's argument(s), filed 08/14/2006 have been fully considered, but are moot as obvious over Sakemura et al., Ando et al., and/or Takayama et al.

According to MPEP § 2144.05 [R-3], differences in concentration (or density) and/or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); see also Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a

disclosed set of percentage ranges is the optimum combination of percentages."); In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

Therefore, such limitation(s) as "... formed at a temperature between about 90°C and less than 200°C" and/or "... formed in a plasma environment having an electron density of at least $3x10^{11}cm^{-3}$" would be held obvious over Sakemura et al., Ando et al., and/or Takayama et al.

Besides, such limitation(s) as *"said dielectric film ... formed at a temperature between about 90°C and less than 200°C" and/or "said dielectric film ... formed in a plasma environment having an electron density of at least* $3x10^{11}cm^{-3}$" is/are process limitation(s), and the discussed claim is drawing to a product. The process limitation(s) of *how the dielectric film(s) being formed on the substrate* has/have no patentable weight in claim drawn to structure. MPEP §2113 states that "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its

method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)." A "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue) and In re Marosi et al, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product by a new method is not patentable as a product, whether claimed in "product by process" claims or not.

Note that applicant has the burden of proof in such cases, as the above caselaw makes clear. See MPEP §2113.

Therefore, the recitation(s) *"said dielectric film ... formed at a temperature between about 90°C and less than 200°C"* and/or *"said dielectric film ... formed in a plasma environment having an electron density of at least* $3x10^{11}cm^{-3}$*"* is/are considered process(es) of making product and is/are given no patentable weigtht in a product-by-process claim and is/are thus non-limiting(s).

Claim Rejections - 35 U.S.C. § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim(s) 1, 4, 5, 13, 16, and 17 are rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 6,404.124 to Sakemura et al.

Regarding claim 1, Sakemura discloses a dielectric device having a dielectric film 13 (fig. 1) formed directly or indirectly on at least a part of a glass substrate or a plastic substrate 10, said dielectric film 13 comprising silicon oxide in a part at least in the direction of the film thickness, the composition ratio of silicon and oxygen being 1:x, wherein X=0.1 to 2.0, which includes between 1:1.94 and 1:2 both inclusive. See col. 5, lines 1-18.

Sakemura does not necessarily teach that the dielectric silicon oxide film 13 being formed at a temperature between about 90°C and less than 200°C.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the silicon oxide of Sakemura could be formed at any suitable temperature, including the claimed temperature, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. See further the above remarks.

Alternately, the recitation(s) *"said dielectric film ... formed at a temperature between about 90°C and less than 200°C"* is/are considered process(es) of making product and is/are given no patentable weigtht in a product-by-process claim and is/are thus non-limiting(s). See further the above remarks.

Regarding claim 4, Sakemura discloses the dielectric device wherein a silicon layer or a silicon compound layer 12/13 is formed directly or indirectly on at least a part of said glass substrate or said plastic substrate 10, and wherein said dielectric film 13 is formed on at least a part of said silicon layer or said silicon compound layer 12/13. See fig. 1.

Regarding claim 5, Sakemura discloses the dielectric device wherein said plastic substrate is made of polyimide resin, polyetherketone resin, polyethersulfone resin, polyetherimide resin, polyethylenenaphthalate resin or polyester resin. See col. 5, lines 4-42.

Regarding claim 13, Sakemura discloses a semiconductor device having a dielectric film 13 formed on at least a part of a silicon layer 12/14 formed directly or indirectly on at least a part of a glass substrate or a plastic substrate 10, said dielectric film 13 comprising silicon oxide in which the composition ratio of silicon and oxygen is

1:x, wherein X=0.1 to 2.0, which includes between 1:1.94 and 1:2 both inclusive. See also col. 5, lines 1-42.

Sakemura does not necessarily teach that the dielectric silicon oxide film 13 being formed at a temperature between about 90°C and less than 200°C.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the silicon oxide of Sakemura could be formed at any suitable temperature, including the claimed temperature, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. See further the above remarks.

Alternately, the recitation(s) *"said dielectric film ... formed at a temperature between about 90°C and less than 200°C"* is/are considered process(es) of making product and is/are given no patentable weigtht in a product-by-process claim and is/are thus non-limiting(s). See further the above remarks.

Regarding claim 16, Sakemura discloses the semiconductor device wherein said dielectric film 13 constitutes a part of a gate dielectric layer relative to the direction of the thickness of the gate dielectric layer. See col. 5, line 1 to col. 6, line 53.

Regarding claim 17, Sakemura discloses the semiconductor device wherein said plastic substrate is made of polyimide resin, polyetheretherketone resin, olyethersulfone resin, polyetherimide resin, polyethylenenaphthalate resin or polyester resin. See col. 5, lines 4-42.

5. Claim(s) 1, 2, 4, 5, 13, 14, 16, and 17 are rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 6,600,524 to Ando et al.

Regarding claim 1, Ando discloses a dielectric device having a dielectric film 14 or 19 (fig. 1) formed directly or indirectly on at least a part of a glass substrate or a plastic substrate 11, said dielectric film 14/19 comprising silicon oxide in a part at least in the direction of the film thickness, the composition ratio of silicon and oxygen being 1:x, wherein $X \geq 1.7$, which includes between 1:1.94 and 1:2 both inclusive. See col. 2, lines 1-25; col. 3, line 1 to col. 4, line 46.

Ando does not necessarily teach that the dielectric silicon oxide film 14/19 being formed at a temperature between about 90°C and less than 200°C.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the silicon oxide of Ando could be formed at any suitable temperature, including the claimed temperature, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or

working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. See further the above remarks.

Alternately, the recitation(s) *"said dielectric film ... formed at a temperature between about 90°C and less than 200°C"* is/are considered process(es) of making product and is/are given no patentable weigtht in a product-by-process claim and is/are thus non-limiting(s). See further the above remarks.

Regarding claim 2, Ando discloses a dielectric device having a dielectric film 14 or 19 (fig. 1) formed directly or indirectly on at least a part of a glass substrate or a plastic substrate 11, said dielectric film 14/19 comprising silicon oxide in a part at least in the direction of the film thickness, the composition ratio of silicon and oxygen being 1:x, wherein $X \geq 1.7$, which includes between 1:1.94 and 1:2 both inclusive. See col. 2, lines 1-25; col. 3, line 1 to col. 4, line 46.

Ando does not necessarily teach that the dielectric silicon oxide film 14/19 being formed in a plasma environment having an electron density of at least $3x10^{11}cm^{-3}$.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the silicon oxide of Ando could be formed in a plasma environment at any suitable density, including the claimed density, since it has been held that where the general conditions of a claim are disclosed in the prior art,

discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. See further the above remarks.

In addition, Ando teaches that the dielectric film 14/19 is formed at 200°C (col. 5, lines 37-38. Hence, Ando does teach the temperature which is close enough to the claimed temperature (of less then 200°C) that one skilled in the art would have expected them to have the same properties (see further MPEP §2144.05). Therefore, the teaching of Ando obviously includes all of the claimed limitations.

Alternately, the recitation(s) *"said dielectric film ... formed in a plasma environment having an electron density of at least* $3x10^{11}cm^{-3}$" is/are considered process(es) of making product and is/are given no patentable weigtht in a product-by-process claim and is/are thus non-limiting(s). See further the above remarks.

Regarding claim 4, Ando discloses the dielectric device wherein a silicon layer 15 or a silicon compound layer 13 is formed directly or indirectly on at least a part of said glass substrate or said plastic substrate 11, and wherein said dielectric film 19, 14 is/are formed on at least a part of said silicon layer 15 or said silicon compound layer 13, respectively. See fig. 1.

Regarding claim 5, Ando discloses the dielectric device wherein said plastic substrate is made of polyimide resin, polyetherketone resin, polyethersulfone resin,

polyetherimide resin, polyethylenenaphthalate resin or polyester resin. See col. 2, lines 1-25; col. 3, line 1 to col. 4, line 46; col. 8, lines 24-56.

Regarding claim 13, Ando discloses a semiconductor device having a dielectric film 14/19 (fig. 1) formed on at least a part of a silicon layer 13/15, respectively, formed directly or indirectly on at least a part of a glass substrate or a plastic substrate 11, said dielectric film 14/19 comprising silicon oxide in which the composition ratio of silicon and oxygen is 1:x, wherein $X \geq 1.7$, which includes between 1:1.94 and 1:2 both inclusive. See col. 2, lines 1-25; col. 3, line 1 to col. 4, line 46.

Ando does not necessarily teach that the dielectric silicon oxide film 14/19 being formed at a temperature between about 90°C and less than 200°C.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the silicon oxide of Ando could be formed at any suitable temperature, including the claimed temperature, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. See further the above remarks.

In addition, Ando teaches that the dielectric film 19 is formed at 200°C (col. 5, lines 37-38. Hence, Ando does teach the temperature which is close enough to the

claimed temperature (of less then 200°C) that one skilled in the art would have expected them to have the same properties (see further MPEP §2144.05). Therefore, the teaching of Ando obviously includes all of the claimed limitations.

Alternately, the recitation(s) *"said dielectric film ... formed at a temperature between about 90°C and less than 200°C"* is/are considered process(es) of making product and is/are given no patentable weigtht in a product-by-process claim and is/are thus non-limiting(s). See further the above remarks.

Regarding claim 14, Ando discloses semiconductor device having a dielectric film 19 (fig. 1) formed on at least a part of a silicon layer 15 directly or indirectly on at least a part of a glass substrate or a plastic substrate 11, said dielectric film 19 comprising silicon oxide in which the composition ratio of silicon and oxygen being 1:X, wherein $X \geq 1.7$, which includes between 1:1.94 and 1:2 both inclusive. See col. 2, lines 1-25; col. 3, line 1 to col. 4, line 46.

Ando does not necessarily teach that the dielectric silicon oxide film 19 being formed in a plasma environment having an electron density of at least $3x10^{11}cm^{-3}$.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the silicon oxide of Ando could be formed in a plasma environment at any suitable density, including the claimed density, since it has been

held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. See further the above remarks.

Alternately, the recitation(s) *"said dielectric film ... formed in a plasma environment having an electron density of at least* $3x10^{11}cm^{-3}$" is/are considered process(es) of making product and is/are given no patentable weigtht in a product-by-process claim and is/are thus non-limiting(s). See further the above remarks.

Regarding claim 16, Ando discloses the semiconductor device wherein said dielectric film 14/19 constitutes a part of a gate dielectric layer relative to the direction of the thickness of the gate dielectric layer. See col. 2, lines 1-25; col. 3, line 1 to col. 4, line 46.

Regarding claim 17, Ando discloses the semiconductor device wherein said plastic substrate is made of polyimide resin, polyetheretherketone resin, olyethersulfone resin, polyetherimide resin, polyethylenenaphthalate resin or polyester resin. See col. 2, lines 1-25; col. 3, line 1 to col. 4, line 46; col. 8, lines 24-56.

6. Claim(s) 2, 3, 14, 15, and 26 are rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent Application Publication No. 2003/0089913 by Takayama et al.

Regarding claim 2, Takayama discloses a dielectric device having a dielectric film 602/604 (figs. 5), 4409b (fig. 7) formed directly or indirectly on at least a part of a glass substrate or a plastic substrate 401 (fig. 2) or 4401 (fig. 7), said dielectric film 602/604 or 4409b comprising silicon nitride in a part at least in the direction of the film thickness, the composition ratio of silicon and nitrogen being 3:3.84. According to paragraphs [0014-0019]; [0058]; [0068-0094], the silicon nitride or silicon oxynitride dielectric film 602/604 or 4409b has the composition ratio in which silicon has a rate of between 25 atomic % to 40 atomic %, and nitrogen has a rate of between 35 atomic % to 65 atomic %. Thus if silicon is selected at a rate of 30%, and nitrogen is selected at 40%, then the composition ratio of silicon and nitrogen will be 3:4.

Takayama does not necessarily teach that the dielectric silicon oxide film 602/604 or 4409b being formed in a plasma environment having an electron density of at least $3x10^{11}cm^{-3}$.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the silicon oxide of Takayama could be formed in a plasma environment at any suitable density, including the claimed density, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. See further the above remarks.

Alternately, the recitation(s) *"said dielectric film ... formed in a plasma environment having an electron density of at least $3x10^{11}cm^{-3}$"* is/are considered process(es) of making product and is/are given no patentable weigtht in a product-by-process claim and is/are thus non-limiting(s). See further the above remarks.

Regarding claim 3, Takayama discloses a dielectric device having a dielectric film 602/604 (figs. 5), 4409b (fig. 7) formed directly or indirectly on at least a part of a glass substrate or a plastic substrate 401 (fig. 2) or 4401 (fig. 7), said dielectric film comprising silicon oxynitride in which the composition ratio of silicon and oxygen is between 1:1.94 and 1:2 both inclusive in a part at least in the direction of the film thickness, or the composition ratio of silicon and nitrogen is 3:4 in a part at least in the direction of the film thickness. According to paragraphs [0014-0019]; [0058]; [0068-0094], the silicon nitride or silicon oxynitride dielectric film 602/604 or 4409b has the composition ratio in which silicon has a rate of between 25 atomic % to 40 atomic %, and nitrogen has a rate of between 35 atomic % to 65 atomic %. Thus if silicon is selected at a rate of 30%, and nitrogen is selected at 40%, then the composition ratio of silicon and nitrogen will be 3:4.

Takayama does not necessarily teach that the dielectric silicon oxide film 602/604 or 4409b being formed in a plasma environment having an electron density of at least $3x10^{11}cm^{-3}$.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the silicon oxide of Takayama could be formed in a plasma environment at any suitable density, including the claimed density, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. See further the above remarks.

Alternately, the recitation(s) *"said dielectric film ... formed in a plasma environment having an electron density of at least* $3x10^{11}cm^{-3}$" is/are considered process(es) of making product and is/are given no patentable weigtht in a product-by-process claim and is/are thus non-limiting(s). See further the above remarks.

Regarding claim 14, Takayama discloses a semiconductor device having a dielectric film 602/604 (figs. 5), 4409b (fig. 7) formed on at least a part of a silicon layer (in which source, drain, and channel regions of the transistor being formed; see para. [0083-00880], and/or figs. 2) formed directly or indirectly on at least a part of a glass substrate or a plastic substrate 401 (fig. 2) or 4401 (fig. 7), said dielectric film comprising silicon nitride in which the composition ratio of silicon and nitrogen is 3:3.84 and 3:4 both inclusive. According to paragraphs [0014-0019]; [0058]; [0068-0094], the silicon nitride or silicon oxynitride dielectric film 602/604 or 4409b has the composition ratio in which silicon has a rate of between 25 atomic % to 40 atomic %, and nitrogen has a rate of between 35 atomic % to 65 atomic %. Thus if silicon is selected at a rate

of 30%, and nitrogen is selected at 40%, then the composition ratio of silicon and nitrogen will be 3:40.

Takayama does not necessarily teach that the dielectric silicon oxide film 602/604 or 4409b being formed in a plasma environment having an electron density of at least $3x10^{11}cm^{-3}$.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the silicon oxide of Takayama could be formed in a plasma environment at any suitable density, including the claimed density, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. See further the above remarks.

Alternately, the recitation(s) *"said dielectric film ... formed in a plasma environment having an electron density of at least* $3x10^{11}cm^{-3}$" is/are considered process(es) of making product and is/are given no patentable weigtht in a product-by-process claim and is/are thus non-limiting(s). See further the above remarks.

Regarding claim 15, Takayama discloses a semiconductor device having a dielectric film 602/604 (figs. 5), 4409b (fig. 7) formed on at least a part of a silicon layer

(in which source, drain, and channel regions of the transistor being formed; see para. [0083-00880], and/or figs. 2) formed directly or indirectly on at least a part of a glass substrate or a plastic substrate 401 (fig. 2) or 4401 (fig. 7), said dielectric film being silicon oxynitride in which the composition ratio of silicon and oxygen is between 1:1.94 and 1:2 both inclusive, or the composition ratio of silicon and nitrogen is between 3:3.84 and 3:4 both inclusive. According to paragraphs [0014-0019]; [0058]; [0068-0094], the silicon nitride or silicon oxynitride dielectric film 602/604 or 4409b has the composition ratio in which silicon has a rate of between 25 atomic % to 40 atomic %, and nitrogen has a rate of between 35 atomic % to 65 atomic %. Thus if silicon is selected at a rate of 30%, and nitrogen is selected at 40%, then the composition ratio of silicon and nitrogen will be 3:4.

Takayama does not necessarily teach that the dielectric silicon oxide film 602/604 or 4409b being formed in a plasma environment having an electron density of at least $3x10^{11}cm^{-3}$.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the silicon oxide of Takayama could be formed in a plasma environment at any suitable density, including the claimed density, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. See further the above remarks.

Alternately, the recitation(s) *"said dielectric film ... formed in a plasma environment having an electron density of at least $3x10^{11}cm^{-3}$"* is/are considered process(es) of making product and is/are given no patentable weigtht in a product-by-process claim and is/are thus non-limiting(s). See further the above remarks.

Regarding claim 26, Takayama discloses a dielectric device having a dielectric film 602/604 (figs. 5), 4409b (fig. 7) formed directly or indirectly on at least a part of a glass substrate or a plastic substrate 401 (fig. 2) or 4401 (fig. 7), said dielectric film being silicon oxynitride in which the composition ratio of silicon and oxygen is between 1:1.94 and 1:2 both inclusive in a part at least in the direction of the film thickness, or the composition ratio of silicon and nitrogen is between 3:3.84 and 3:4 both inclusive in a part at least in the direction of the film thickness. According to paragraphs [0014-0019]; [0058]; [0068-0094], the silicon nitride or silicon oxynitride dielectric film 602/604 or 4409b has the composition ratio in which silicon has a rate of between 25 atomic % to 40 atomic %, and nitrogen has a rate of between 35 atomic % to 65 atomic %. Thus if silicon is selected at a rate of 30%, and nitrogen is selected at 40%, then the composition ratio of silicon and nitrogen will be 3:4.

Takayama does not necessarily teach that the dielectric film 602/604 (figs. 5), 4409b (fig. 7) being formed at a temperature between about 90°C and less than 200°C.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the silicon oxide of Takayama could be formed at any suitable temperature, including the claimed temperature, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. See further the above remarks.

Alternately, the recitation(s) *"said dielectric film ... formed at a temperature between about 90°C and less than 200°C"* is/are considered process(es) of making product and is/are given no patentable weigtht in a product-by-process claim and is/are thus non-limiting(s). See further the above remarks.

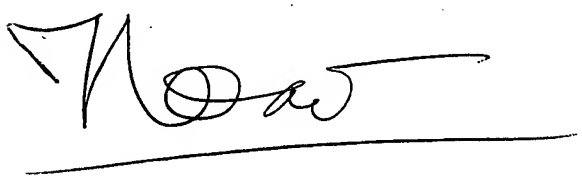
Conclusion

7. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dao H. Nguyen whose telephone number is (571)272-1791. The examiner can normally be reached on Monday-Friday, 9:00 AM – 6:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Matthew Smith, can be reached on (571)272-1907. The fax numbers for all communication(s) is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-1625.



Dao H. Nguyen
Art Unit 2818
October 18, 2006